CLAIMS

1. A vertical shaft impact crusher for crushing material, said crusher (50) comprising

a rotor (1) for accelerating a first flow of material (M1) to be crushed,

a first feed means (56, 90, 96) for vertically feeding the first flow of material (M1) to the rotor (1),

a housing (52) comprising a wall (70) with a circumferential impact wall section (76) against which the accelerated first flow of material (M1) may be crushed,

a second feed means (54, 56, 62, 58, 66, 80, 74, 78, 82) for feeding a second flow of material (M2) to be crushed into the path of the accelerated first flow of material (M1), c h a r a c t e r i s e d in that

the second feed means (54, 56, 62, 58, 66, 80, 74, 78, 82) comprises means (66, 78, 80) for forming at least one hillside (108, 110) on which the second flow of material (M2) may slide, the hillside (108, 110) having a slope being substantially tangential in relation to the rotor (1) for directing the second flow of material (M2) in a direction having a substantially tangential component in relation to the rotor (1), such that the second flow of material (M2) will have a substantially tangential component of movement in relation to the rotor (1) when reaching the path of the first flow of material (M1).

2. A crusher according to claim 1, wherein the wall (70) of the housing (52) comprises a circumferential distributing wall section (74) forming part of the second feed means (54, 56, 62, 58, 66, 80, 74, 78, 82) and being located above said impact wall section (76), the second feed means comprising means (54, 56, 62, 58, 66) for feeding, in a first step, the second flow of material (M2) in a direction towards the distributing wall section

(74), which is adapted to receive the second flow of material (M2) and to direct it against the impact wall section (76).

3. A crusher according to claim 2, wherein the feed hopper means (54) comprises an inner hopper (56) and an outer hopper (58) surrounding the inner hopper (56), said hoppers (56, 58) having a common vertical axis substantially coinciding with the vertical axis of the rotor (1), the inner hopper (56) being provided with at least one outlet (62) for allowing the second flow of material (M2) fed to the inner hopper (56) to enter a space (60) formed between the inner and the outer hopper (56, 58), an "L"-shaped direction arm (66) being fixed in the space (60) between said hoppers (56, 58) just outside said outlet (62) to facilitate the building of a hillside (108) of accumulated material, the hillside (108) having a slope being tangential in relation to the rotor (1) for directing the second flow of material (M2) towards the distributing wall section (74).

4. A crusher according to claim 3, wherein a horizontal leg (104) of the "L"-shaped direction arm (66) is pointing in the rotational direction (R) of the rotor (1), such that any dust (D) entrained by the rotor (1) in a direction having an upwardly directed component and a component being tangential in relation to the rotor (1) will be hindered by a vertical leg (102) of the direction arm (66).

5. A crusher according to claim 3 or 4, wherein the inner and outer hoppers (56, 58) have a polygonal shape as seen from above.

6. A crusher according to any one of claims 2-5, wherein the second feed means further comprises the upper surface (82) of a ring (78) fixed to the inner side of the wall (70) of said housing (52) to separate the distributing wall section (74) from the impact wall section (76) located below it.

7. A crusher according to claim 6, wherein the second feed means further comprises at least one vertical collection plate (80) extending radially with respect to the rotor (1), the collection plate (80) being fixed to the upper face (82) of the ring (78) at such a location that a part of the second flow of material (M2) fed towards the distributing wall section (74) in said first step will accumulate against the collection plate (80) to form a hillside (110) of material, the hillside (110) having a slope being substantially tangential in relation to the rotor (1) for giving the second flow of material (M2) a substantially tangential component of movement in relation to the rotor (1) when reaching the path of the first flow of material (M1).

8. A method of crushing material, said method comprising the steps of

feeding a first flow of material (M1) to be crushed to a rotor (1) rotating around a vertical axis,

in said rotor (1) accelerating said first flow of material towards an impact wall section (76) of a housing (52) surrounding the rotor (1),

feeding a second flow of material (M2) to be crushed into the path of the accelerated first flow of material (M1),

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feeding the second flow of material (M2) in a direction having a substantially tangential component in relation to the rotor (1), such that the second flow of material (M2) will have a substantially tangential component of movement in relation to the rotor (1) when reaching the path of the first flow of material (M1).

9. A method according to claim 8, wherein the second flow of material (M2) is fed into the path of the first flow of material (M1) adjacent to the impact wall section (76).

10. A method according to claim 8 or 9, wherein the second flow of material (M2) is fed from a position

adjacent to the axis of the rotor (1) towards a wall (70) of the housing (52) in a direction having a substantial tangential component in relation to the rotor (1).

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